UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF NEW YORK

ICM CONTROLS CORP., *et al.*,

Plaintiffs,

-against- 5:12-CV-1766 (LEK/ATB)

HONEYWELL INTERNATIONAL, INC.,

Defendant.

MEMORANDUM-DECISION AND ORDER

I. INTRODUCTION

In this case, ICM Controls Corp. and International Controls and Measurements Corp. accuse Honeywell International, Inc. of infringing two of their patents related to ignition systems for gas furnaces. Dkt. No. 1 ("Complaint"); U.S. Patent No. 5,889,645 (filed Apr. 14, 1997); U.S. Patent No. 6,222,719 (filed July 15, 1999). After the Court denied Honeywell's motion to dismiss on compulsory counterclaim grounds, Int'l Controls & Measurements Corp. v. Honeywell Int'l, Inc., No. 12-CV-1766, 2013 WL 4805801 (N.D.N.Y. Sept. 9, 2013) (Kahn, J.), Magistrate Judge Andrew T. Baxter stayed proceedings in this case pending inter partes review of the '719 Patent by the U.S. Patent and Trademark Office's Patent Trial and Appeal Board ("PTAB"), Dkt. Nos. 80 ("Stay Stipulation"), 81 ("Stay Order"). The PTAB ultimately found all of the claims that Honeywell allegedly infringed to be unpatentable, Honeywell Int'l Inc. v. Int'l Controls & Measurements Corp., No. IPR2014-219, 2015 WL 1504850 (P.T.A.B. Apr. 1, 2015); see also Dkt. No. 96-5 ("Defendant's Exhibits pt. I") Ex. 2, at 2 (listing ICM's asserted claims), and this decision was affirmed by the Federal Circuit, 642 F. App'x 980 (Fed. Cir. 2016) (mem.).

Back in Albany, at a conference before Judge Baxter, ICM conceded that the PTAB decision foreclosed its claims of infringement based on the '719 Patent. Text Minute Entry, Mar. 24, 2016. Even though discovery had not concluded, Honeywell believed that an early summary judgment motion could resolve the case in its favor on the basis of noninfringement of the '645 Patent, and would not require construction of disputed claim terms in that patent. Id. Over ICM's objection, Honeywell was allowed to move for summary judgment, id.; Dkt. No. 93 ("Deadlines Order"), which it did in April of last year. Dkt. No. 96 ("Honeywell Summary Judgment Motion"); see also Dkt. Nos. 96-1 ("Honeywell Statement of Material Facts"), 96-2 ("Honeywell Memorandum"), 113 ("ICM Opposition"), 113-1 ("ICM Response Statement of Material Facts"), 121 ("Honeywell Reply"). Then, just before the Court could decide Honeywell's motion, ICM filed its own motion for partial summary judgment, seeking a finding of infringement by Honeywell and thus construction of the disputed terms. Dkt. No. 128 ("ICM Summary Judgment Motion"); see also Dkt. Nos. 131-1 ("ICM Memorandum"), 131-2 ("ICM Statement of Material Facts"), 139 ("Honeywell Opposition"), 139-18 ("Honeywell Response Statement of Material Facts"), 143 ("ICM Reply").

These dueling motions are now before the Court. Also pending are two additional motions by ICM: one to strike portions of Honeywell's Statement of Material Facts ("SMF"), Dkt. No. 110 ("Strike Motion"); see also Dkt. No. 120 ("Strike Response"), and another to bar Honeywell from filing additional summary judgment motions in this case, Dkt. No. 111 ("Bar Motion"); see also Dkt. No. 119 ("Bar Response"). For the following reasons, both summary judgment motions are denied, ICM's Strike Motion is denied as moot, and ICM's Bar Motion is granted in part.

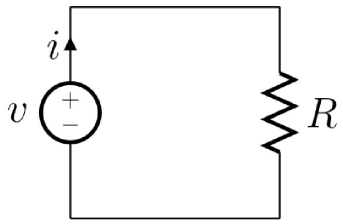
II. BACKGROUND

A. Basic Science

The patent in this case concerns a circuit, one application of which is the control of a gas furnace. '645 Patent col. 1 ll. 5–7. Because the functioning of these circuits and how they activate various devices is crucial to the outcome of this case, the Court will briefly outline the basic science behind circuits and the elements at issue in this case before describing the specific invention and products disputed here.

1. Circuits Generally

A circuit is a path through which an electric charge flows. Dkt. No. 70-3 ("Eisenstadt Primer") ¶ 8.[1] This current (or flow) occurs when electrons, which carry a negative electric charge, move within the circuit. Id. A basic circuit might include a voltage source (such as a battery), a load (such as a light bulb), and wires connecting them in a loop, id., and could be described using the following circuit diagram:



Here, a voltage source is represented by the circle with the + and – symbols, the light bulb could be seen as the resistor marked *R*, and the lines connecting them are wires.[2] While in

[1] The Court has also reviewed Honeywell's technology tutorial, Dkt. No. 64-5 ("First Gafford Declaration"), and alternates in citing between them for convenience. There is no meaningful difference between the two in the portions discussed here.

[2] These and other circuit elements will be explained further below.

reality, it is normally the negatively charged electrons that move between atoms in the wire, by convention, this current is labeled on circuit diagrams as flowing from positive to negative, First Gafford Decl. ¶ 15, which is seen in the arrow labeled *i* in the diagram.[3]

The voltage of the power source, denoted as *V*, describes the electromotive force provided to the circuit, and can be compared to the pressure generated by a pump in a plumbing system. Eisenstadt Primer ¶ 9. The unit of measurement for voltage is the volt (V). Id. The current within a circuit, denoted as *I*, is the resulting flow of electric charge (i.e., the amount of electric charge passed through the circuit over a given unit of time). Id. ¶ 11. In the plumbing analogy, current would measure the gallons of water per minute flowing through the system. Id. The unit of measurement for current is the ampere (A), or amp for short. Id.; First Gafford Decl. ¶ 16.

2. Resistance and Ohm's Law

While electricity will easily flow through some materials (like a copper wire), others are less conductive and resist the flow of current. First Gafford Decl. ¶¶ 14, 18.[4] When incorporated into a circuit, this type of material is called a resistor, and is shown in a circuit diagram as a series of jagged lines: 

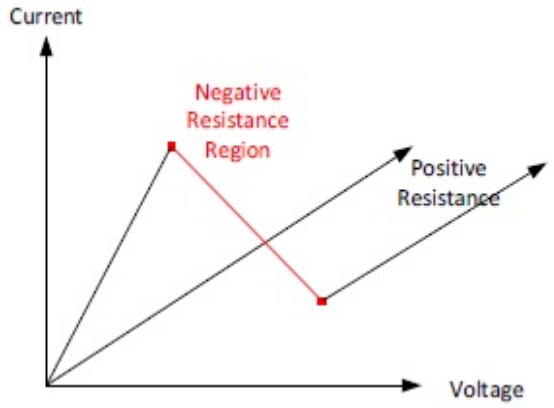
[3] While direct current (or DC) maintains a constant polarity, and thus can be described as flowing from positive to negative within the circuit, an alternating current (or AC) source changes polarity, and the resulting current can instead be thought of as moving back and forth within the circuit. First Gafford Decl. ¶¶ 16–17; Eisenstadt Primer ¶ 10.

[4] The flow of current through a resistor causes energy to be released as heat, First Gafford Decl. ¶ 19, as seen in heating the filament within the light bulb discussed above. Outside of a quantum-mechanical phenomenon called superconductivity, all materials exhibit some degree of resistance. See id. ¶ 14 (noting that real wires exhibit resistance and are heated when current flows through them).

The amount that a resistor limits the flow of current is called its resistance, denoted as *R*, and is measured in units called ohms (Ω). Id. ¶ 18; Eisenstadt Primer ¶ 12. In the plumbing analogy discussed above, the resistance is like the width of the pipe supplied by the pump. First Gafford Decl. ¶ 18. The greater the resistance, the narrower the pipe. Id. If the pump supplies the same pressure (voltage) no matter how wide the pipe it is connected to, the amount of water flowing through the system (current) will decrease as the pipe is narrowed (resistance). Id. Similarly, for a pipe of a given width, the greater the pressure applied by the pump, the more water will flow through the system.

This relationship between current, resistance, and voltage is called Ohm's law, and is described by the formula $I = V / R$. Id. In an ordinary resistor, the resistance is constant and positive. Thus, the greater the voltage across the resistor, the greater the current flowing through it. Id.

Some devices do not have a constant resistance, however. While the current through the device is a function of the voltage across it and its resistance, the amount of resistance can vary based on the voltage or the current. Dkt. No. 176-2 ("First Eisenstadt Declaration") ¶¶ 24–25. If, at a given level of voltage, an increase in voltage actually decreases the current passing through the device, the device exhibits a region of negative resistance. Id. The following graph (called an I-V curve) contrasts the current for a given voltage in a normal and in a negative resistance device:



Id. ¶ 24.[5]

3. Other Circuit Elements

a. Inductors

Several other basic circuit elements are also seen in the patent, and thus are worth briefly covering here. First is the inductor, which is also known as a coil. Eisenstadt Primer ¶ 14; First Gafford Decl. ¶ 22. An inductor consists of loops of a conductive wire, which together create a magnetic field when an electric current flows through them. Eisenstadt Primer ¶ 14. Inductors are shown in circuit diagrams as a series of loops: 

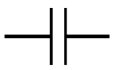
Inductors can also be joined together—that is, wrapped around the same magnetic core—to form a transformer. Id. ¶ 20; First Gafford Decl. ¶ 23. When the current changes in one of the inductors, the changing magnetic field generates a current in the second conductor. Eisenstadt Primer ¶ 20. Because the voltage and current in the second coil depend on the ratio of

[5] The term "negative resistance" refers to a negative *differential* resistance, which is the change in voltage for a given change in current. The static resistance—or, using Ohm's law, the voltage divided by the current—remains positive at every voltage level in the example above.

"turns" or loops of the two cables around the core, transformers can be used to change the voltage between two circuits. Id.

One important aspect of inductors is that, because of their magnetic fields, they resist changes in current across them and generate a voltage countering the change in current. Id. ¶ 14. This is called flyback voltage. First Gafford Decl. ¶ 20. Because the energy stored in the inductor's magnetic field increases with the time current is applied to it, and the faster the change in current, the greater the flyback voltage produced, this principle can be used to generate voltages considerably greater than the voltage initially applied to the inductor. Id.

b. Capacitors

Another circuit element seen in the patent is a capacitor. Capacitors consist of two metal plates placed close to each other, allowing charge to be stored in the electric field between them. Id. ¶ 21. As current flows into a capacitor, the amount of charge stored in it (and thus its voltage) increases over time. Id.; Eisenstadt Primer ¶ 13. Thus, a capacitor can be seen as charging up over time, allowing that energy to later be released into the circuit. The symbol for a capacitor appears as two parallel plates: 

c. Diodes

Yet another component seen in the patent is the diode, which is made out of a special material called a semiconductor. Eisenstadt Primer ¶ 15. Diodes allow current to flow through them in only one direction, and thus can be seen as one-way valves in the circuit. Id.; First Gafford Decl. ¶ 25. The symbol for a diode looks like an arrow (showing the direction that current will flow) and a line (showing the side from which current is blocked): 

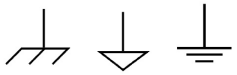
d. Transistors

The last basic component to cover is the transistor, which is also made from a semiconductor. Eisenstadt Primer ¶ 18. A basic form of transistor can operate as an electronic switch, in which the application of a voltage at one of its terminals permits current to flow between the other two. Id. The symbol for one type of transistor—a bipolar transistor—is as follows: 

In the symbol, the line leading into the transistor from the left represents the "base," or control terminal. Id. When sufficient voltage is applied to the base, the switch is turned on and current can flow through the transistor from the collector (the top line) to the emitter (the bottom line), as shown by the arrow on the emitter. Id. When the voltage at the base is sufficiently lowered, the switch is turned off and current can no longer flow between the collector and the emitter. Id. There are also other types of transistors, some called MOS or MOSFET, id. ¶ 19; First Eisenstadt Decl. ¶ 59(h)(vi), but the differences among these are not at issue in the summary judgment motion. In a MOS or MOSFET, the base is instead called the gate, the collector is called the drain, and the emitter is called the source. Eisenstadt Primer ¶ 19.

e. Returns

Though not components within a circuit, the diagrams involved in this case also include symbols denoting circuit returns or grounds. In the simple circuit diagram shown earlier in this section, current flowed from the positive side of a voltage source through a resistor and back to the negative side of the voltage source. In more complex diagrams, this return path can be omitted, and is instead represented by a symbol signifying a return connection to the source. See, e.g., First Eisenstadt Decl. ¶ 7 (noting the "ground connection[]" as allowing current to

flow). There are various symbols used for different types of returns, but the differences are not at issue here. Three such symbols seen in this case are as follows: 

B. The ’645 Patent

The ’645 Patent concerns a control circuit, specifically one that can control a gas furnace. ’645 Patent col. 1 ll. 5–14. When a thermostat determines a need for heat, a signal is sent for the furnace to start. Id. ll. 31–33. Starting the furnace in turn requires several devices to activate, including a gas valve, an igniter, and several blowers to move gases and hot air through the system. Id. ll. 15–50. The control circuit is responsible for activating these devices in the correct order and ensuring that they all work properly. See id. col. 2 ll. 1–17 (describing the structure of a furnace control unit).

In the prior art (i.e., the state of the art before the invention described by the patent), separate outputs from a microprocessor were used to trigger the different components of the furnace. Id.; ICM Resp. SMF ¶¶ 31–41. The following circuit diagram exemplifies this prior art:

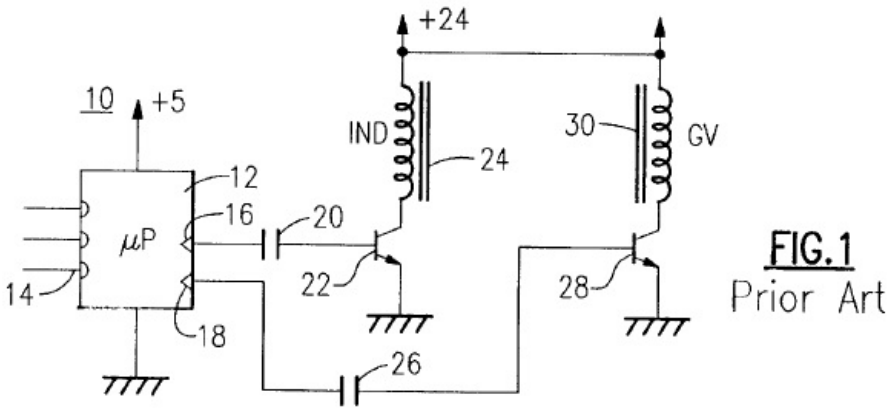


FIG. 1
Prior Art

’645 Patent fig.1. As shown, the microprocessor has two outputs (labeled 16 and 18) used to trigger two different devices, which are activated using two actuator coils (labeled 24 and 30). Id. col. 6 ll. 1–19. When a signal at an appropriate frequency (i.e., a certain speed of the current switching on and off) appears at a given microprocessor output, it triggers the associated transistor (labeled 22 and 28), allowing current to flow from the voltage source (denoted by the “+24” at the top of the drawing) to the return on the other side of the transistor. Id. ll. 19–25. This in turn causes the current to flow through the respective coil, actuating the associated device. Id.

This design has a few drawbacks, which are caused by the separation of the circuit into distinct portions for each device. Id. ll. 27–37. First, the design can present a safety hazard in which the gas valve is turned on without activating the other furnace components. Id. Since the circuitry for activating the gas valve is not “directly tied to the integrity of the” other components and their control system, it can be actuated when the other components are inoperative, which in turn “can lead to fire, explosion, or suffocation.” Id. col. 3 ll. 11–15. Second, the system requires separate microprocessor outputs for each component to be activated, id. col. 6 ll. 33–37, which in turn increases the cost and complexity of the microprocessor, id. col. 3 ll. 8–11.

The patent seeks to resolve this circuit split, solving these problems by including the coils for both devices in a single portion of the circuit. A drawing showing one implementation of the patent is included here:

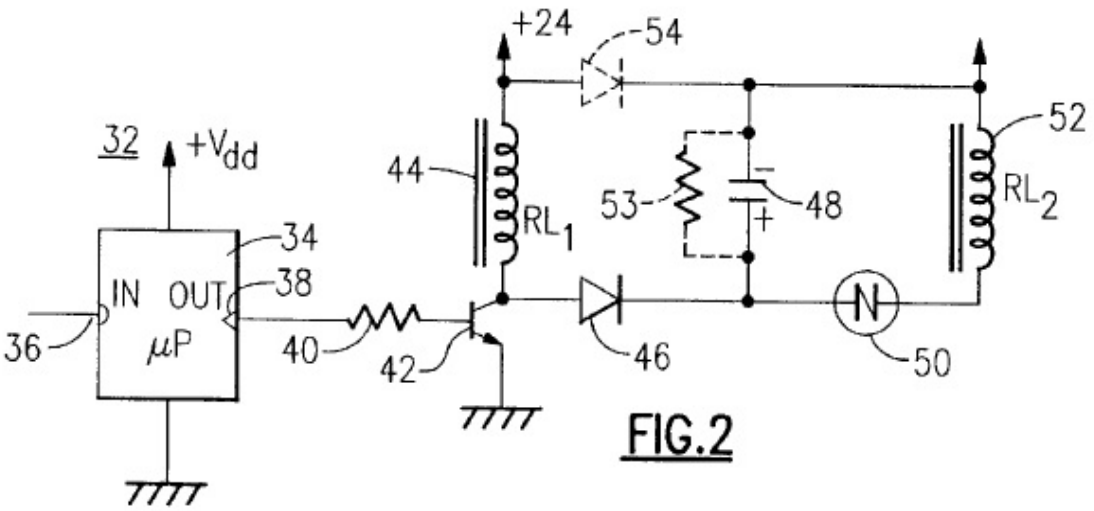


FIG.2

Id. fig.2.

As in the prior art, this structure begins with an output from a microprocessor (labeled 38), but here, one output can control both coils (labeled 44 and 52). Id. col. 6 ll. 38–63. When a pulsating signal is applied from this output, the transistor (labeled 42) switches on and off, causing a change in current through the first coil (RL_1). Id. col. 7 ll. 48–53. While this actuates the device associated with the first coil, it also creates flyback voltage (discussed above) due to the current cutting off. Id. ll. 52–57. Since the transistor is off at that point in time, this flyback voltage instead passes through the diode (labeled 46). Id. ll. 56–59.

The key to actuating the second coil (RL_2) is the interaction between this flyback voltage and a negative resistance device (labeled 50). Id. ll. 57–62. The voltage-current (or I-V) graph for this negative resistance device is as follows:

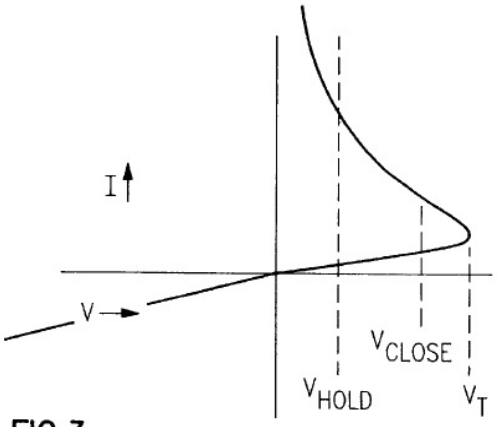


FIG.3

CHARACTERISTIC OF NEGATIVE RESISTANCE DEVICE 50

Id. fig.3.

Starting at zero voltage, the device "exhibits a high positive resistance" and permits very little current to pass through it. Id. col. 7 ll. 13–16. But the device exhibits a "knee" at a certain threshold voltage (V_T). Id. ll. 16–17. Once this threshold voltage is reached, the device "exhibits a region of negative resistance"—essentially, the voltage breaks over the threshold level and current flows through the device. Id. ll. 16–20. After this high voltage is discharged, even a lower voltage across the device will still permit current to flow. Id. ll. 20–21. Returning to the plumbing analogy, the negative resistance device here is like a valve that will open only when a high pressure is applied to it, but once open, a far lower pressure is enough to keep it from closing.

When flyback voltage passes through the diode, it becomes trapped between the diode and the negative resistance device, and thus builds up on the capacitor (labeled 48 in figure 2). Id. ll. 57–59, fig.2. This is important because the second coil requires a high initial voltage to

first actuate (or close) the associated device, but a lower voltage to keep it on once started. Id. col. 6 ll. 63–66. These voltages are labeled V_{CLOSE} and V_{HOLD} in figure 3. Id. ll. 63–66, fig.3. Because V_T—the threshold voltage—is greater than V_{CLOSE}, the current will not pass across the negative resistance device until it exceeds the voltage needed to actuate the second device. Id. col. 7 ll. 22–25, 59–64.[6]

With each on-off cycle of the transistor, more and more voltage builds up on the capacitor. Id. ll. 52–62. Eventually this level exceeds V_T, breaking through the negative resistance device and causing current to pass through the second coil. Id. ll. 59–64. Once this occurs and the second device is actuated, the lower flyback voltage generated by each subsequent cycle of the transistor is sufficient to continue through the negative resistance device and keep the device turned on. Id. ll. 64–67. Further, by carefully selecting the particular circuit components and changing the frequency of the microprocessor output, the circuit can actuate either one or both of the devices at a given time. Id. col. 4 ll. 63–col. 5 ll. 12.

The patent describes two main advantages of this design compared to the prior art. First, it provides a fail-safe system in which the furnace gas valve (the second device above) will not turn on if certain other components have failed. Id. col. 3 ll. 56–59, col. 5 ll. 13–18, col. 8 ll. 1–4. The second advantage is that "the number of controller output terminals can be reduced

[6] At first, it may be unclear why this positive charge would cause a current through the second coil, since the other side is also connected to a positive voltage supply. This is because voltage—the difference in electric potential—is relative, and so a current would flow between two regions, even if they are both designated as "positive," provided that one is more positively charged than the other. See '645 Patent col. 7 ll. 25–28 ("This arrangement permits the capacitor 48 to charge up its lower side to a voltage that is positive, i.e., higher than the +24 volts that appears on its upper side.").

for a given number of driven elements," thus reducing cost and complexity. Id. col. 2 ll. 8–10, col. 3 ll. 65–67.

While there is some variation among the claims in the patent, the first claim contains the limitations relevant to this motion:

> Arrangement for actuating two or more actuator devices from a single microprocessor output, comprising
>
> a microprocessor control element having an input terminal and an output terminal, said output terminal providing a signal which is high, low, or intermittent depending on an input signal applied at said microprocessor input terminal;
>
> a switch device having a control input coupled to the output terminal of said microprocessor control element, a first current carrying electrode connected to a current sink, and a second current carrying electrode;
>
> a first relay actuator coil for actuating one of said devices, and having a first end connected to a voltage supply and a second end connected to the second current carrying electrode of said switch device;
>
> a first capacitor having a first terminal connected to the first end of said first relay actuator coil, and a second terminal;
>
> a one-way current conducting device having a first electrode connected to the second electrode of said first relay actuator coil and a second electrode connected to the second terminal of said first capacitor;
>
> a second relay actuator coil for actuating a second one of said devices, and having a first end connected to the first terminal of said capacitor and a second end; and
>
> a negative resistance device having a first end connected to the second terminal of said first capacitor and a second end connected to the second end of said second relay actuator coil.

Id. col. 9 ll. 6–34.

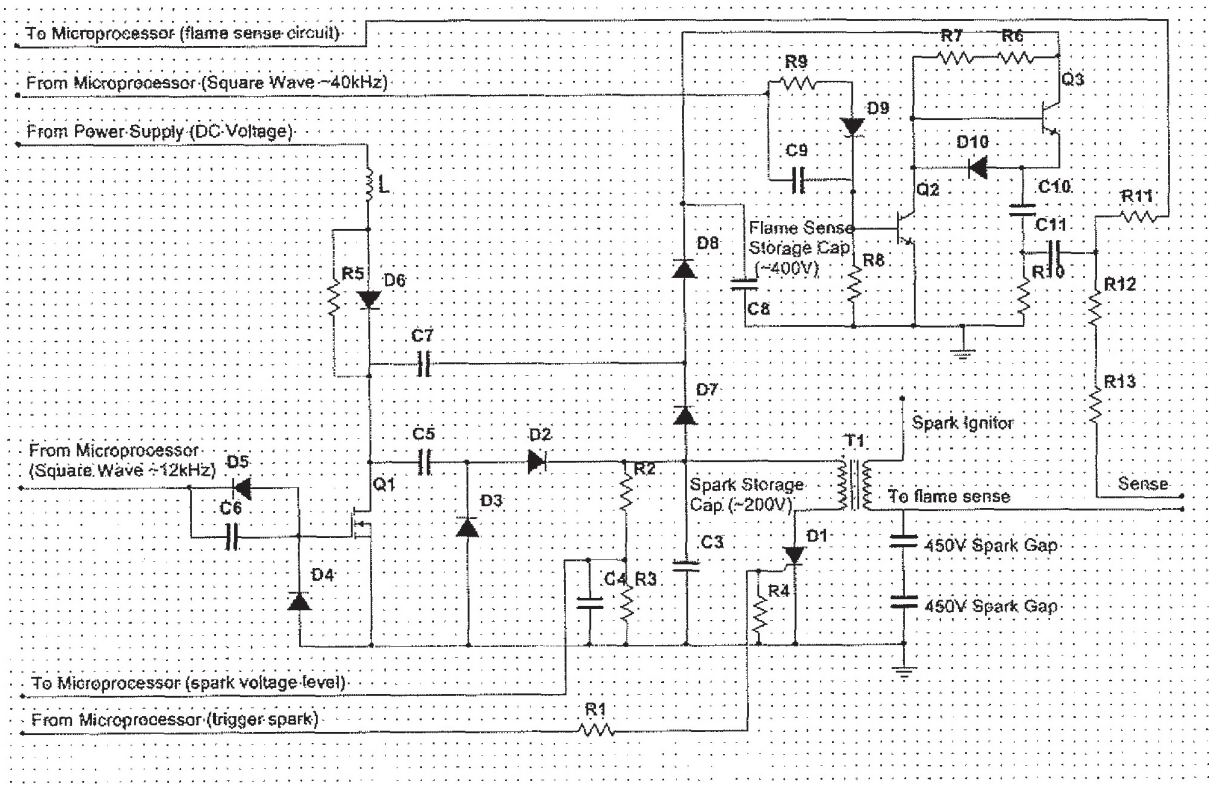
C. The Accused Products and Infringement Claims

On October 17, 2013, ICM submitted its infringement contentions as required by Local Rule of Procedure for Patent Cases 3.1. Dkt. No. 96-5 ("Exhibits pt. I"), Ex. 2; ICM Resp. SMF

¶ 80. There, ICM explains why it believes several Honeywell control circuits infringe on the patent, Exs. pt. I, Ex. 2, at 2–3, singling out "products with the same or substantially the same circuitry as used in Honeywell's S8610U Series 2 and 3 controls," ICM Resp. SMF ¶ 81. For both the Series 2 and Series 3 circuits, ICM included a table listing each element from the claim quoted above and noting how the Honeywell circuits either literally infringe or infringe under the doctrine of equivalents (which is discussed further below). Exs. pt. I, Ex. 2, at C-1 to -4, D-1 to -4.[7]

1. The Series 2 Circuit

ICM's drawing of the Series 2 circuit is included here:



[7] Other claims were included as well, e.g., Exs. pt. I, Ex. 2, at C-4 to -13, but the differences among these are not relevant to the summary judgment motions.

Id. at C-14. Though arranged differently, ICM's infringement contentions describe how it believes the elements in this circuit correspond to those described in the patent. Id. at C-1 to -4. For example, the transistor labeled Q1 above corresponds to the transistor in the patent, the coil labeled L is the first relay actuator coil,[8] D2 is the diode that the flyback voltage passes through, C3 is the capacitor that stores this voltage, and the primary coil of T1 (a transformer) is the second relay actuator coil. Id. at C-1 to -3.

The main source of disagreement comes from the negative resistance device described in the patent. According to ICM, the device labeled D1 in the Series 2 circuit is a silicon-controlled rectifier, or SCR, a type of negative resistance device. Id. at C-3 to -4; ICM Resp. SMF ¶ 89. As in the patent, voltage builds up on the capacitor C3, trapped between the diode D2 and the negative resistance device D1 until D1 is triggered and current is allowed to flow. See Exs. pt. I, Ex. 2, at C-3 to -4 (comparing the SCR's role in the Series 2 circuit to the negative resistance device in the '645 Patent).

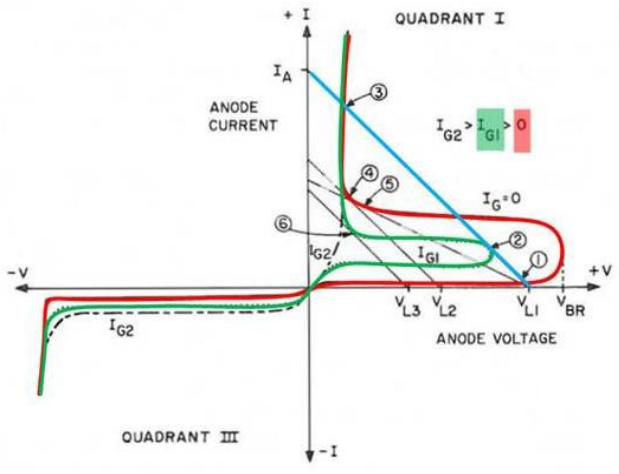
Not so fast, says Honeywell. Pointing to the Series 2 drawing, it notes that a second microprocessor output (labeled "trigger spark") connects to the SCR. Honeywell SMF ¶ 91. This seems to be at odds with the preamble to the patent's claim, which describes an "[a]rrangement for actuating two or more actuator devices *from a single microprocessor output*." '645 Patent col. 9 ll. 6–7. According to Honeywell, "current will not flow through the primary coil of T1

[8] As discussed below, Honeywell disputes ICM's assertion that coil L is literally a relay actuator coil, Exs. pt. I, Ex. 2, at C-1, since the patent appears to use this term when referring to an electromechanical switch that uses the coil's magnetic field to "close its associated contact," e.g., '645 Patent col. 4 ll. 38–41. Here the coil only seems to be used for its properties as an inductor. Exs. pt. I, Ex. 2, at C-1. Honeywell did not raise this issue in its motion, however, and only discusses it in opposing ICM's motion for summary judgment. Honeywell Opp'n at 22–24.

unless the microprocessor output connected to the SCR switch D1 causes it to conduct," but Honeywell supports this claim only through a citation to the drawing of the Series 2 circuit, which itself says nothing about the operation of the SCR or the role of the second microprocessor output. Honeywell SMF ¶ 92 (citing Exs. pt. I, Ex. 2, at C-14).

ICM predictably disputes Honeywell's assertion. ICM Resp. SMF ¶ 92. In opposing summary judgment, ICM's expert discusses the operation of SCRs and how they fit within the patent's description of negative resistance devices. Id.; First Eisenstadt Decl. ¶¶ 45–54. Unlike the two-terminal negative resistance device depicted in figure 2 of the patent, in which current simply flows from one side (the anode) to the other (the cathode) when the voltage between them exceeds the threshold level, an SCR has three terminals: an anode, a cathode, and a gate. First Eisenstadt Decl. ¶¶ 47–48. As in a transistor, the gate functions as a sort of control terminal, in part determining whether current can flow between the other two terminals. Id. ¶ 48. But, as ICM's expert explains, the SCR is not an on-off switch, and can operate as a negative resistance device without applying any current to the gate. Id. ¶¶ 48–51.

Reproduced in ICM's expert declaration is the I-V graph "for a typical SCR":



Id. ¶ 49 (citing Gen. Elec., SCR Manual fig.4.1 (D.R. Grafham & F.B. Golden, eds., 6th ed. 1982)). Though somewhat more complicated, the current-voltage characteristics of an SCR can be compared to those of the negative resistance device described in the patent. See '645 Patent fig.3 (graphing the I-V characteristics of a negative resistance device).

When no current is applied to the gate, the SCR exhibits I-V characteristics described by the red line on the graph labeled $I_G = 0$. First Eisenstadt Decl. ¶ 50.[9] As in figure 3 of the '645 Patent, voltage can increase across the SCR with very little current until a threshold voltage or "knee" is reached, labeled V_{BR} in the graph for the SCR. Id. Once this occurs, the device triggers (or "enters . . . negative resistance mode") and current is allowed to flow, even with a significantly reduced voltage. Id. The device will remain in this state and continue to conduct "until the voltage at its output terminals comes to nearly zero through external factors." Id. ¶ 30.[10]

When current is applied to the gate, it changes the I-V characteristics of the SCR. Id. ¶ 51. As the gate current increases above zero, the SCR's threshold voltage decreases, shrinking the knee and allowing current to begin flowing at a lower voltage level. Id. The graph above shows the I-V characteristics when the gate current is at some level I_{G1} that is greater than zero (drawn in green). Id. As shown, the knee narrows and moves to the left as current is applied to the gate, meaning that a lower voltage level will suffice to break over the knee (i.e., enter

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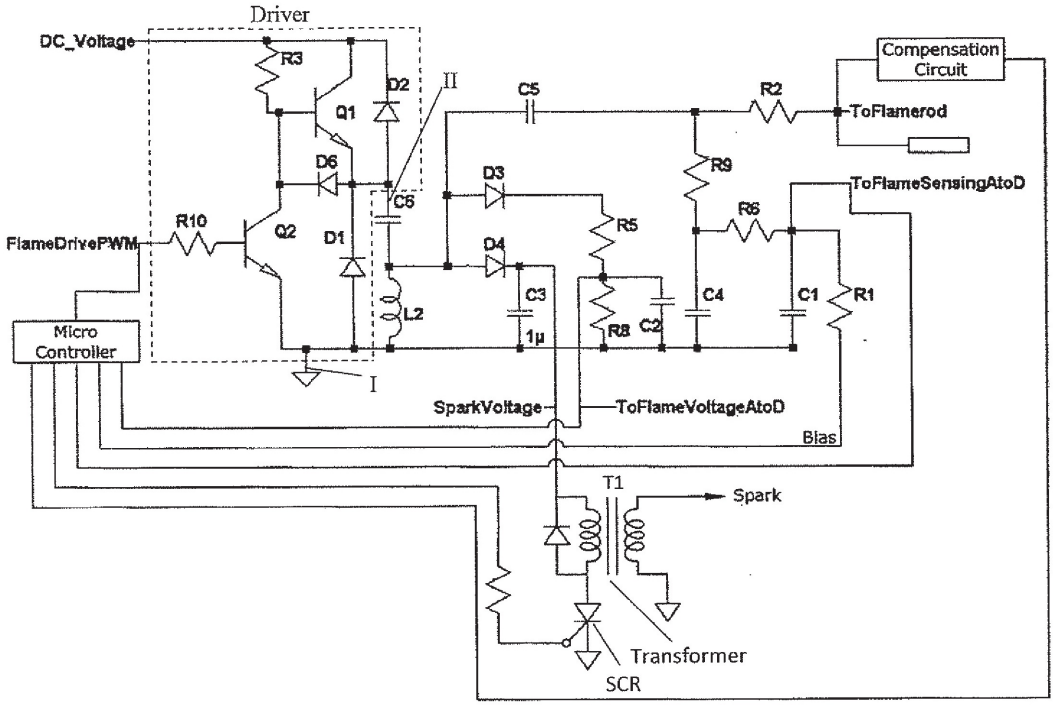
[9] Here, I_G refers to the gate current. First Eisenstadt Decl. ¶ 50.

[10] While the reality of SCR operation may be more complex than this, and when the device switches off could depend in part on the gate voltage, see Gen. Elec., supra, § 4.1 (describing the SCR triggering process), these issues are irrelevant to deciding this motion, and in either case, all reasonable inferences must be drawn in ICM's favor from the First Eisenstadt Declaration, e.g., Harris v. Provident Life & Accident Ins. Co., 310 F.3d 73, 79 (2d Cir. 2002).

"negative resistance mode"). Id. ¶¶ 49, 51. The gate current can thus be used to dial in a specific threshold voltage to the SCR (or, at a specific gate current level—labeled I_{G2}—eliminate the knee shape altogether). Id. As discussed below, the central question in Honeywell's motion is whether this gate functionality—and the additional microprocessor output attached to it—runs afoul of the patent's preamble, which describes an arrangement for actuating two or more devices "from a single microprocessor output." '645 Patent col. 9 ll. 6–7.

2. The Series 3 Circuit

As noted above, ICM also claims that the Series 3 circuit infringes upon the patent. ICM Resp. SMF ¶ 81; Exs. pt. I, Ex. 2, at D-1 to -12. ICM's drawing of the Series 3 circuit is included here:



Exs. pt. I, Ex. 2, at D-12. According to ICM's infringement contentions, the entire arrangement labeled "Driver" is a "switch device" equivalent to the transistor in figure 2 of the patent (itself containing transistors labeled Q1 and Q2), the coil labeled L2 is the first relay actuator coil, the diode D4 corresponds to the diode in the patent drawing, the primary winding of transformer T1 is the second relay actuator coil, and the SCR at the bottom of the Series 3 drawing is again the negative resistance device. Id. at D-1 to -4. The issues in these motions concerning the Series 3 circuit are essentially the same as those for the Series 2.

D. Honeywell's Summary Judgment Motion

All of this leads to the motions for summary judgment, with Honeywell's aiming to defeat ICM's claims related to the '645 Patent on the basis of noninfringement. E.g., Honeywell Mem. at 1. First, Honeywell argues that the preambles to the independent claims limit the patent to arrangements where only a single output is used to actuate two or more devices. Id. at 11. In order to win on this argument, three points would need to be resolved in Honeywell's favor: the preamble would need to limit the patent claims, id. at 14, the term "a single microprocessor output" would need to be construed as permitting just one output to be used in actuating the devices, id. at 11–13, and Honeywell would have to prove that a second output is required to actuate the second device in the accused products, id. at 14–16.

Second, Honeywell argues that even under ICM's proposed claim construction, the accused products do not infringe the '645 patent. Id. at 16–17. Confusingly, the parties appear to disagree not only over the correct construction of the patent, but also as to what ICM's proposed construction is. Honeywell claims that ICM's construction requires that the previously mentioned "one output" cause the negative resistance device to conduct (yet another way of

saying that the second output means the accused products cannot infringe). Id. at 16–17. ICM's view of its own interpretation differs from Honeywell's—it believes that the claims are not limited by how the negative resistance device is triggered. ICM Opp'n at 12–14.[11] Nevertheless, for Honeywell to succeed on this point, it must prove that the second device in the accused products "cannot operate unless and until the alleged 'negative resistance device' (SCR) receives a command from [the] additional separate microprocessor output." Honeywell Mem. at 19.

Finally, Honeywell asserts that ICM cannot rely on the doctrine of equivalents, id. at 20–21, a patent doctrine that covers products with elements that, while not literally infringing the claims, are effectively the same as the claimed elements, e.g., Graver Tank & Mfg. Co. v. Linde Air Prods. Co., 339 U.S. 605, 608 (1950). This is because the use of the doctrine would "read[] out" the limitation of a single output actuating both devices (essentially restating its first argument above), the prior art of a two-output device would be recaptured by applying the patent against Honeywell (another version of the single-output argument), and because one of the elements—the capacitor upon which the charge for actuating the second device accrues—is the "polar opposite" of the patent claim because "it is connected to the opposite end" of the negative resistance device. Honeywell Mem. at 22–23.

E. ICM's Summary Judgment Motion

Countering Honeywell's attempt to end this case, ICM itself seeks partial summary judgment, asking the Court to find that Honeywell's products infringe the '645 Patent. ICM Mem. at 1. In part, this again turns on whether the preambles to the patent's independent claims

[11] For more on metainterpretations in this case, see Int'l Controls & Measurements Corp., 2013 WL 4805801, at *5 n.10 (discussing Federal Circuit deferral to Second Circuit interpretation of procedural rules).

are limiting. Id. at 4–6. Beyond that, ICM also needs to show that each element of the patent's claim is found—either literally or through the doctrine of equivalents—within the accused products. Id. at 6–20.

Honeywell's opposition is based largely on the same grounds as its noninfringement motion, namely that the preamble is limiting and the accused products' need for two outputs from the microprocessor forecloses any possibility of infringement. Honeywell Opp'n at 6–11. But Honeywell raises other arguments as well. Specifically, it claims that the SCR in the accused products is not a "negative resistance device" within the meaning of the patent, id. at 12–15, the inductors in the accused products are not "relay actuator coils," id. at 16–24, the microprocessor's output fails to meet the patent's requirements, id. at 24–26, the term "powered device" raises problems for one of the independent claims, id. at 26–27, and the presence of additional components within the circuit means that the elements seen in the patent are not "connected" or "coupled" as required by the claims, id. at 27–30.[12]

III. LEGAL STANDARD

Rule 56 of the Federal Rules of Civil Procedure instructs courts to grant summary judgment if "there is no genuine dispute as to any material fact and the movant is entitled to judgment as a matter of law." Fed. R. Civ. P. 56(a). Although "[f]actual disputes that are

[12] Throughout its response to ICM's statement of material facts, Honeywell repeatedly objects to the use of Dr. Eisenstadt's declaration, claiming that it is merely "an expert opinion and not a fact." E.g., Honeywell Resp. SMF ¶ 6; cf. The Big Lebowski at 28:50 (Gramercy Pictures 1998) (responding to an assertion of bowling prowess by claiming "that's just, like, your opinion, man"). It is well settled that an expert's opinion—unless impermissible under the Federal Rules of Evidence—can support a motion for summary judgment. E.g., Intellectual Sci. & Tech., Inc. v. Sony Elecs., Inc., 589 F.3d 1179, 1183–84 (Fed. Cir. 2009); Universal Instruments Corp. v. Mico Sys. Eng'g, Inc., No. 13-CV-831, 2017 WL 745594, at *11 n.8 (N.D.N.Y. Apr. 11, 2017).

irrelevant or unnecessary" will not preclude summary judgment, "summary judgment will not lie if . . . the evidence is such that a reasonable jury could return a verdict for the nonmoving party." Anderson v. Liberty Lobby, Inc., 477 U.S. 242, 248 (1986); see also Taggart v. Time, Inc., 924 F.2d 43, 46 (2d Cir. 1991) ("Only when no reasonable trier of fact could find in favor of the nonmoving party should summary judgment be granted.").

The party seeking summary judgment bears the burden of informing the court of the basis for the motion and of identifying those portions of the record that the moving party claims will demonstrate the absence of a genuine issue of material fact. Celotex Corp. v. Catrett, 477 U.S. 317, 323 (1986). Similarly, a party is entitled to summary judgment when the nonmoving party carries the ultimate burden of proof and has failed "to establish the existence of an element essential to that party's case, and on which that party will bear the burden of proof at trial." Id. at 322.

In attempting to repel a motion for summary judgment after the moving party has met its initial burden, the nonmoving party "must do more than simply show that there is some metaphysical doubt as to the material facts." Matsushita Elec. Indus. Co. v. Zenith Radio Corp., 475 U.S. 574, 586 (1986). At the same time, a court must resolve all ambiguities and draw all reasonable inferences in favor of the nonmoving party. Reeves v. Sanderson Plumbing Prods., Inc., 530 U.S. 133, 150 (2000); Nora Beverages, Inc. v. Perrier Grp. of Am., Inc., 164 F.3d 736, 742 (2d Cir. 1998). Thus, a court's duty in reviewing a motion for summary judgment is "carefully limited" to finding genuine disputes of fact, "not to deciding them." Gallo v. Prudential Residential Servs., Ltd. P'ship, 22 F.3d 1219, 1224 (2d Cir. 1994).

IV. DISCUSSION

A. Claim Construction Standard

"The construction and interpretation of patent claims is an issue of law for courts to decide." Briggs & Stratton Corp. v. Chongqing Rato Power Co., No. 13-CV-316, 2014 WL 4888266, at *2 (N.D.N.Y. Sept. 30, 2014) (Kahn, J.) (citing Markman v. Westview Instruments, Inc., 517 U.S. 370, 390 (1996)). While "[i]n some cases, the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent," courts may resolve ambiguities by looking to intrinsic evidence in the patent and its prosecution, as well as extrinsic evidence if the patent cannot otherwise be construed. Phillips v. AWH Corp., 415 F.3d 1303, 1314 (Fed. Cir. 2005) (en banc); accord LRC Elecs., Inc. v. John Mezzalingua Assocs., Inc., 974 F. Supp. 171, 181 (N.D.N.Y. 1997).

Turning first to intrinsic evidence, the terms in a patent's claims must be construed in light of the specification. Markman v. Westview Instruments, Inc., 52 F.3d 967, 979 (Fed. Cir. 1995) (en banc), aff'd, 517 U.S. 370. "A court should also consult the patent's prosecution history, which, like the specification, provides evidence of how the PTO and the inventor understood the claimed invention." Advanced Fiber Techs. (AFT) Tr. v. J&L Fiber Servs., Inc., 674 F.3d 1365, 1372 (Fed. Cir. 2012). Thus, a "claim term will not receive its ordinary meaning if the patentee acted as his own lexicographer and clearly set forth a definition of the disputed claim term in either the specification or prosecution history." CCS Fitness, Inc. v. Brunswick Corp., 288 F.3d 1359, 1366 (Fed. Cir. 2002).

If the claim language and other intrinsic evidence is not enough, courts can look to extrinsic evidence to see how someone reasonably skilled in the art would understand a disputed

term. Phillips, 415 F.3d at 1317. Extrinsic evidence can include dictionaries, treatises, and expert testimony. Id. at 1318; CCS Fitness, 288 F.3d at 1366. But extrinsic evidence carries less weight than, and must be viewed in light of, the intrinsic evidence available to the court. Phillips, 415 F.3d at 1318–19; Briggs & Stratton, 2014 WL 4888266, at *2.

While courts sometimes hold so-called Markman hearings to assist in claim construction, these hearings are necessary only if in-person expert testimony is needed to interpret the disputed term. Radiancy, Inc. v. Viatek Consumer Prod. Grp., Inc., No. 13-CV-3767, 2015 WL 221063, at *1 (S.D.N.Y. Jan. 14, 2015); LRC Elecs., 974 F. Supp. at 181; see also Baron Servs., Inc. v. Media Weather Innovations, Inc., 717 F.3d 907, 919 n.4 (Fed. Cir. 2013) ("[I]n the context of a given case, claim construction can, and does, occur solely based on the paper record."); J.G. Peta, Inc. v. Club Protector, Inc., 65 F. App'x 724, 727 n.2 (Fed. Cir. 2003) ("[D]istrict courts are not required to follow any particular procedure in conducting claim construction . . . ."). Courts also often combine claim construction with summary judgment motions when the meanings of patent terms can resolve the parties' motions, and also if a complete claim construction would provide for a more efficient resolution of the case. E.g., Briggs & Stratton, 2014 WL 4888266, at *2.

B. Are the Preambles Limiting?

The most hotly disputed issue in the parties' motions is whether the preambles to the independent claims are limiting. E.g., Honeywell Mem. at 11–16; ICM Mem. at 4–6. For example, in claim 1, the preamble describes the claim as an "[a]rrangement for actuating two or more actuator devices *from a single* microprocessor output." '645 Patent col. 9 ll. 6–7 (emphasis added). This "from a single" language appears in each of the relevant preambles. Id. col. 10 ll.

32–33, col. 11 ll. 13–15. According to Honeywell, this phrase negates any possibility of infringement, since in each of the accused products a second microprocessor output is connected to the gate of the SCR. Honeywell Mem. at 11–16.

Not so, according to ICM. Under its view, the preamble is not limiting because it merely "describes the use or purpose of the invention." ICM Opp'n at 6. Thus, because the elements following the preamble entirely describe the structure of ICM's invention, the preamble cannot be read to impose additional limitations on the patent. ICM Mem. at 5.

"Whether to treat a preamble term as a claim limitation is 'determined on the facts of each case in light of the claim as a whole and the invention described in the patent.'" Am. Med. Sys., Inc. v. Biolitec, Inc., 618 F.3d 1354, 1358 (Fed. Cir. 2010) (quoting Storage Tech. Corp. v. Cisco Sys., Inc., 329 F.3d 823, 831 (Fed. Cir. 2003)). "Generally, the preamble does not limit the claims." Allen Eng'g Corp. v. Bartell Indus., Inc., 299 F.3d 1336, 1346 (Fed. Cir. 2002). But "[i]f the claim preamble, when read in the context of the entire claim, recites limitations of the claim, or, if the claim preamble is 'necessary to give life, meaning, and vitality' to the claim, then the claim preamble should be construed as if in the balance of the claim." Pitney Bowes, Inc. v. Hewlett-Packard Co., 182 F.3d 1298, 1305 (Fed. Cir. 1999) (quoting Kropa v. Robie, 187 F.2d 150, 152 (C.C.P.A. 1951)).

The preambles of the '645 Patent's independent claims are not limiting. This is because, as ICM argues, the preamble merely extols the benefits of the invention described in the claims, e.g., Catalina Mktg. Int'l, Inc. v. Coolsavings.com, Inc., 289 F.3d 801, 809 (Fed. Cir. 2002), and such descriptions of the invention's intended use are not limiting elements of the patent.

For example, in Marrin v. Griffin, the Federal Circuit reviewed a patent with the preamble, "A scratch-off label for permitting a user to write thereon without the use of a marking implement." 599 F.3d 1290, 1292 (Fed. Cir. 2010). The question was whether "for permitting" and the following language served as a limitation on the claim. Id. at 1293–94. The court found that it did not, since that language "only added a statement of a purpose or an intended use of the invention." Id. at 1294. The parallels between the preamble language in Marrin and in the '645 Patent dictate the same outcome here.

Furthermore, preambles are not limiting "when the claim body describes a structurally complete invention such that deletion of the preamble phrase does not affect the structure or steps of the claimed invention." Catalina, 289 F.3d at 809; accord Am. Med. Sys., 618 F.3d at 1358–59. In the '645 Patent, the independent claims completely describe the invention's structure without reference to the preamble. Indeed, looking to claim 1, the elements after the word "comprising" show the microprocessor element's connection to a switch device, which—through its direct and indirect connections to a voltage source and the other components of the invention—can actuate a first actuator device by causing intermittent current through a first relay actuator coil, and can actuate a second actuator device using flyback voltage from the first coil. '645 Patent col. 9 ll. 6–34. Nothing in the claim's preamble contributes to this functionality.

While the claim later refers back to the term "actuator devices" in the preamble, e.g., id. ll. 17, 29, this does not "render the preamble a necessary component of the claimed invention," Novatek, Inc. v. Sollami Co., 559 F. App'x 1011, 1015 (Fed. Cir. 2014). This is because the structure of the invention itself is fully described by the claim elements following the preamble,

with the reference to "said [actuator] devices" only illustrating the purpose of the "relay actuator coil[s]," namely, "actuating . . . said devices." '645 Patent col. 9 ll. 6–34. The relay actuator coils themselves do not require any antecedent reference to the preamble.[13]

Nor did ICM rely on the preamble to distinguish its invention from the prior art. While "[c]lear reliance on a preamble during prosecution can distinguish a claimed invention from the prior art and render the preamble a claim limitation," Marrin, 599 F.3d at 1294, there is no evidence that ICM relied on the preamble during the patent's prosecution at all, and the patent's specification does not demonstrate clear reliance on Honeywell's proposed construction of the preambles' "from a single output" language.

First, the examiner noted as a reason for allowance that "[t]he cited references do not teach nor suggest an arrangement for actuating one or more actuator devices . . . from a single output of a control element . . . as disclosed in [the] independent claims," Dkt. No. 139-12, at 3, but this does not show that ICM clearly relied upon the preamble language in prosecuting the patent. For the '645 Patent, the examiner allowed the patent based solely on the initial application, id. at 2; ICM Reply at 5, and so there is no statement by ICM aside from the patent itself that can be seen as attempting to limit its claims based on the preamble. The examiner's statement of allowance cannot alone constitute clear reliance on the preamble, e.g., Salazar v. Procter & Gamble Co., 414 F.3d 1342, 1345 (Fed. Cir. 2005); 3M Innovative Props. Co. v. Avery Dennison Corp., 350 F.3d 1365, 1373–74 (Fed. Cir. 2003), and even if it could, the

[13] As discussed later in this opinion, even if reference to the preamble were required for the term "actuator devices," this would not make the rest of the preamble limiting.

examiner's statement appears to be a description of the claims as a whole rather than a particular focus on the preamble as a critical aspect of the invention.

Second, the '645 Patent's specification does not show clear reliance on the preamble to avoid a prior-art rejection. While the reduction of required output terminals on the microprocessor—along with the cost savings this provides—was cited as an improvement of the invention over the prior art, '645 Patent col. 2 ll. 8–10, col. 3 ll. 65–67, it was not the only benefit touted by ICM. According to the specification, the design also allows for increased safety by preventing the second actuator or powered device from activating if an earlier component is malfunctioning, id. col. 3 ll. 56–59, col. 5 ll. 13–18, col. 8 ll. 1–4, an advantage that can still be realized even if a second, additional output is also needed to activate the second device. Thus, since ICM did not clearly rely on the preamble during its prosecution of the '645 Patent, the preambles to its independent claims do not limit their scope.

C. The Microprocessor

1. Is the Microprocessor Element Limited to One Output?

Beyond the preamble to the independent claims, Honeywell argues that the presence of a second microprocessor output connected to the SCR still means that the accused products cannot infringe the '645 Patent. This is because the first element of the independent claims requires a "control element having . . . an output terminal," id. col. 9 ll. 8–9, which Honeywell reads to exclude any control element with more than one output terminal used for actuating the two or more devices described in the patent, Honeywell Opp'n at 10–11; see also Honeywell Mem. at 11–14 (pointing to both the preamble and the "an output" language to argue that the claims are limited to only one microprocessor output).

Honeywell's argument is resolved by looking to the structure of the independent claims. "In the patent claim context the term 'comprising' is well understood to mean 'including but not limited to.'" CIAS, Inc. v. Alliance Gaming Corp., 504 F.3d 1356, 1360 (Fed. Cir. 2007); accord, e.g., MagSil Corp. v. Hitachi Glob. Storage Tech., Inc., 687 F.3d 1377, 1383 (Fed. Cir. 2012); Crystal Semiconductor Corp. v. TriTech Microelectronics Int'l, Inc., 246 F.3d 1336, 1348 (Fed. Cir. 2001). Indeed, the Federal Circuit "has consistently emphasized that the indefinite articles 'a' or 'an,' when used in a patent claim, mean 'one or more' in claims containing open-ended transitional phrases such as 'comprising.'" Crystal Semiconductor, 246 F.3d at 1347.

This rule decides the construction of "an output terminal" within the claims at issue in this case. Because the independent claims in the patent here are all open-ended "comprising" claims, e.g., '645 Patent col. 9 ll. 6–7, the element "an output terminal" does not prevent products with additional output terminals—even those with some role in the same portion of the circuit discussed in the claim—from falling within the scope of the patent.

While Honeywell claims that the intrinsic evidence—most importantly, the patent's specification—demonstrates that the "an output" language limits the scope of the patent, Honeywell Opp'n at 10–11, this is incorrect for the same reasons discussed with respect to the preamble. ICM did not clearly rely on Honeywell's alleged limitation during the patent's prosecution, and the full range of the specification's posited inventive benefits is not foreclosed through the use of a second output. Accordingly, the first element of the independent claims does not limit the patent's scope to control elements for which only a single output is involved in the control of the actuator or powered devices.

2. The "High, Low, or Intermittent" Limitation

Honeywell also takes issue with the capabilities of the microprocessor outputs in the accused products, claiming they do not meet the minimum requirements expressed in the patent and thus cannot infringe. Honeywell Opp'n at 24–26. This argument comes from the independent claims' description of the microprocessor's output terminal as "providing a signal which is high, low, or intermittent depending on an input signal." '645 Patent col. 9 ll. 9–11. In its opposition brief, Honeywell argues that "all three signal conditions (high, low or intermittent) are required for the circuit to work as intended," since without the ability to select each of those conditions, the circuit "could not select which of the devices to actuate." Honeywell Opp'n at 25. Thus, because the corresponding microprocessor output in the accused products "provide[s] a signal which is low or intermittent, but not high," they cannot infringe ICM's patent. Id. at 26. In support of this argument, Honeywell points to the patent's specification, claiming that the description of the invention and its preferred embodiment show that all three output states are required to select which device is actuated. Id. at 24–25; Dkt. No. 139-17 ("Second Gafford Declaration") ¶¶ 103–06.

But Honeywell's reading of the specification is erroneous, perhaps stemming from a confusion between the frequency of the intermittent (pulsed) signal—used to choose whether the first, second, or both devices are activated—and the high and low signals. The specification is clear that the "low" signal represents an off state, the "high" signal is the on state, and the "intermittent" signal is a pulsed output, alternating between the on and off states at a given frequency. See '645 Patent col. 2 ll. 25–36 (describing inputs as changing from "low" to "high" when they are triggered); id. col. 6 ll. 21–25 ("[T]he actuator coils 24 and 30 are energized when

pulses at a suitable repetition frequency appear at the respective output terminals 16 and 18, but are unenergized if there is a dc high or low voltage appearing at the microprocessor output terminals."). The abstract also confirms this understanding, noting that the "output terminal can provide a high, low, or pulse output signal." Id. at [57].

The claim that the accused products are incapable of a "high" output is thus incorrect, since the intermittent output by definition includes both the high and low states. Honeywell's expert appears to accept this point, noting that the claim involves "a single digital output which has only two possible states," namely on and off. Second Gafford Decl. ¶ 106. If both high and low outputs are necessary to produce an intermittent signal, it cannot be that the accused products—which undisputedly produce an intermittent output signal—are incapable of producing an output in the "high" state.

ICM's description of the preferred embodiment of the patent further precludes Honeywell's reading. In this description, ICM explains the operation of the circuit in terms of the different output signals from the microprocessor. '645 Patent col. 7 ll. 30–67, col. 8 ll. 1–58. In describing the ability to select which actuator device or devices are actuated based on the microprocessor output, the patent notes that the first device "can be turned on initially to test for operability" using "a low frequency (dc to about 100 Hz)" output from the microprocessor. Id. col. 7 ll. 31–35. While the preferred embodiment does seem to allow for the possibility of a constant "on" signal to trigger the first actuator device (seen in its reference to "dc" as one such frequency), it also allows for a low frequency pulse "to about 100 Hz." Id. ll. 33–35. Nowhere else in the preferred embodiment is a constant high output contemplated, meaning that the

preferred embodiment could be achieved using only what Honeywell describes as low and intermittent outputs.

Honeywell's expert seems to admit this point, stating that it is a change in "the frequency of the microprocessor's square-wave output" that allows for the selection of different devices for actuation. Second Gafford Decl. ¶ 104. As noted above, such a square wave is the "intermittent" signal referred to within the patent, and so even under Honeywell's view, this inventive aim can be achieved even without the use of a constant high output.[14]

The correct reading of the signal-type limitation is that the microprocessor must be able to, based on an input signal, produce a high or low output (i.e., turn on and off) and be able to do so in a intermittent or pulsed fashion such that a square wave is produced at one or more frequencies. This construction includes the microprocessor outputs in the accused products, which provide a low or intermittently low and high signal. Honeywell Opp'n at 25–26; Second Gafford Decl. ¶ 107. Though this portion of the claim could certainly have been better worded to avoid this issue (and indeed, it is unclear why this limitation was necessary at all), the Court will not construe a claim to exclude a preferred embodiment of the invention unless absolutely necessary. See, e.g., Amgen Inc. v. Hoechst Marion Roussel, Inc., 314 F.3d 1313, 1349 (Fed. Cir. 2003) ("A claim interpretation that reads out a preferred embodiment 'is rarely, if ever, correct and would require highly persuasive evidentiary support.'" (quoting Vitronics Corp. v.

[14] Though much of this section is focused on the ability to select which devices are triggered using only a single output, it is again worth noting that this is only one of the purported benefits of ICM's invention. As discussed above, the fail-safe improvement claimed by ICM, '645 Patent col. 3 ll. 56–59, col. 5 ll. 13–18, col. 8 ll. 1–4., is achieved regardless of whether another microprocessor output is required to actuate the second device, so long as the first output is also required.

Conceptronic, Inc., 90 F.3d 1576, 1583 (Fed. Cir. 1996))); Dow Chem. Co. v. Sumitomo Chem. Co., 257 F.3d 1364, 1378 (Fed. Cir. 2001) ("[I]t is . . . well established that a claim construction that excludes a preferred embodiment is 'rarely, if ever, correct.'" (emphasis omitted) (quoting Vitronics, 90 F.3d at 1583)). Here, the claims should be construed to include the full range of ICM's preferred embodiment, which contemplates a microprocessor output that supplies a high output only as part of a pulsed signal.

D. The Negative Resistance Device

The remainder of Honeywell's summary judgment motion, and a key disputed portion of ICM's motion, is dedicated to the argument that the SCRs in the accused products are not negative resistance devices within the meaning of the patent. Honeywell Mem. at 16–23; Honeywell Opp'n at 12–15. This largely turns on the construction of "negative resistance device" and whether that construction excludes SCRs due to their gate-triggering functionality. Honeywell Mem. at 16–18; ICM Opp'n at 9–10. ICM proposes that "negative resistance device" means "[a] device which, under certain conditions, exhibits a characteristic, whereby the current through the device increases with a drop in voltage across the device." Dkt. No. 58 ("Joint Claim Construction Statement") at 20. Honeywell, on the other hand, proposes that the term means "a device that has high positive impedance until the applied voltage reaches a threshold voltage, and then drops to a low impedance when that threshold is reached, causing the capacitor to discharge through the second relay actuator coil (or other powered device)." Id.

Honeywell's proposed construction is essentially correct, an outcome that is confirmed by the patent's specification. In discussing the negative resistance device, the patent states that "[t]he negative resistance device has a high positive impedance until the . . . capacitor is charged

to a threshold voltage, and then drops to a low impedance when that threshold is reached." '645 Patent col. 4 ll. 41–45. The patent also notes that this negative resistance device could be "a diac, silicon bilateral switch, silicon unilateral switch, tunnel diode, neon lamp, or any other device having the appropriate negative resistance characteristic for this application." Id. col. 7 ll. 8–13; see also id. col. 4 ll. 31–33 (stating that the negative resistance device could be "a diac, tunnel diode, or other appropriate device").[15] In describing this "negative resistance characteristic," the specification refers to figure 3 and notes that the device exhibits high positive resistance up to a threshold voltage V_T, at which point a knee in the I-V graph is reached. Id. col. 7 ll. 13–17. Once the applied voltage rises above this threshold, it passes over the knee and resistance is reduced, allowing current to flow though the device until the voltage falls below a lower minimum level. Id. ll. 16–21. Based on this language in the specification, it seems clear that a negative resistance device—to fit within the claims of the patent—must exhibit a threshold voltage below which the device has high positive resistance, and beyond which is a region of negative differential resistance that in turn leads to a region of lower positive resistance.

But even under this construction, Honeywell has failed to show the absence of a factual dispute over whether the accused products' SCRs are negative resistance devices. ICM

[15] These examples are somewhat confusing, since diacs exhibit current controlled (or S-type) negative resistance—similar to the I-V characteristics depicted in figure 3 of the patent—while tunnel diodes exhibit voltage controlled (or N-type) negative resistance. See Gen. Elec., supra, fig.2.1 (showing I-V characteristics for diacs and tunnel diodes). The difference between S- and N-type negative resistance devices—with the letter S or N being roughly comparable to the shape of the device's I-V graph—is ultimately irrelevant here, because both figure 3 of the patent and SCRs exhibit S-type negative resistance. Compare '645 Patent fig.3, with First Eisenstadt Decl. ¶ 49.

specifically disputes the proposition that "a threshold voltage condition does not cause SCR switch D1 to conduct," citing its expert declaration to explain the functionality of SCRs. ICM Resp. SMF ¶ 94. In that declaration, Dr. Eisenstadt includes the I-V graph "for a typical SCR" (reproduced above), First Eisenstadt Decl. ¶ 49, which bears a striking resemblance to the I-V curve for a negative resistance device included in the patent, '645 Patent fig.3. In describing these characteristics, Dr. Eisenstadt notes that when a gate current is applied, the SCR's I-V curve still "exhibits a 'knee,' but the threshold anode to cathode voltage level is reduced, decreasing the break over voltage required to put the SCR in negative resistance mode. . . . Put otherwise, the threshold voltage level—the conditions for when the negative resistance device is put into negative resistance mode—can vary depending on the gate current." First Eisenstadt Decl. ¶ 51. This demonstrates a dispute of material fact over whether the SCR meets the patent's definition of negative resistance device, specifically whether it exhibits high impedance until a threshold voltage is reached, at which point the impedance drops to a lower level. The ability of this threshold level to change based on the gate-to-cathode voltage does not change whether such a threshold level exists, and Honeywell has failed to undisputedly demonstrate the absence of this characteristic within the accused products' SCRs.

Honeywell takes its argument a step further, however, arguing that even within its proposed construction, the "threshold voltage" must be an unchanging attribute of the negative resistance device, such that no gate voltage is required for the device to conduct, because this is apparently what the patent "disavows from the prior art." Honeywell Mem. at 18.[16] But even if

[16] This is yet another rendition of the single-output argument discussed above, which once again is not the sole inventive benefit claimed in the patent specification. '645 Patent col. 3 ll. 56–59, col. 5 ll. 13–18, col. 8 ll. 1–4.

Honeywell's argument (as opposed to the text of its proposed construction) is correct, and a circuit element cannot be a negative resistance device unless it conducts after reaching a threshold voltage between its anode and cathode without any voltage at the gate, Honeywell Mem. at 16–20, the summary judgment evidence still demonstrates a factual dispute over this issue.

According to Honeywell, "ICM's drawings confirm that" the second actuator in the accused products "cannot operate unless and until the [SCR] receives a command from that additional separate microprocessor output." Honeywell Mem. at 19. This is incorrect on several grounds. First, a circuit diagram cannot show how a component depicted on that diagram operates; it shows only how the components are connected. The presence of a connection between the microprocessor and the gate of the SCR is not evidence that the SCR "cannot operate unless and until" voltage is applied across its gate. Id. Second, this claim is flatly disputed by ICM, and its expert declaration creates a genuine dispute of material fact. ICM Resp. SMF ¶¶ 92–94. As stated by ICM's expert, "[a]n SCR will also conduct without a trigger signal when the anode to cathode voltage level exceeds the break over voltage of the SCR." First Eisenstadt Decl. ¶ 48; see also id. ¶¶ 49–51 (discussing the current-voltage characteristics of SCRs). While Honeywell's expert does note that "[a]s [SCRs] are normally used . . . no current passes until a 'trigger' voltage that is about 1 vote more positive than the cathode, is applied to the gate," First Gafford Decl. ¶ 28, this only serves to illustrate the existence of a factual dispute between the parties. As noted above, the Court's duty on a motion for summary judgment is limited to determining the existence of genuine disputes of fact, not to resolving them. Gallo, 22 F.3d at 1224.

In its reply, Honeywell again asserts that the "accused products *require* a second microprocessor output to trigger," pointing to ICM's expert declaration as an admission of this point. Honeywell Reply at 1 (citing First Eisenstadt Decl. ¶ 44). But this is a selective reading of the expert materials. While Dr. Eisenstadt does say that the second output can cause the SCR to conduct, First Eisenstadt Decl. ¶ 44, on the very next page he notes that "[a]n SCR will also conduct without a trigger signal when the anode to cathode voltage level exceeds the break over voltage of the SCR," meaning that "an SCR can be put into negative resistance mode with and without a trigger signal," id. ¶ 48. Selectively quoting just one paragraph of ICM's expert declaration cannot transform it into "a key dispositive admission" that this second output is required for the SCR to conduct. Reply at 1.

In sum, ICM's expert materials suggest that an SCR can conduct without the second output at all, thus behaving exactly like the example negative resistance device found in the '645 Patent's specification. Under these facts, the SCR's gate functionality can be seen as an additional feature added to the negative resistance device described in the patent: both will trigger when the capacitor reaches a certain voltage, but while the patent uses a negative resistance device with a fixed threshold voltage as an example, the SCR allows this voltage to be dialed down by applying current at the gate. First Eisenstadt Decl. ¶¶ 50–51.

"[A]n accused device cannot escape infringement by merely adding features, if it otherwise has adopted the basic features of the patent." Radio Steel & Mfg. Co. v. MTD Prods., Inc., 731 F.2d 840, 848 (Fed. Cir. 1984); accord Vita-Mix Corp. v. Basic Holding, Inc., 581 F.3d 1317, 1327 (Fed. Cir. 2009); Vulcan Eng'g Co. v. Fata Aluminium, Inc., 278 F.3d 1366, 1375–76 (Fed. Cir. 2002); Data Line Corp. v. Micro Tech., Inc., 813 F.2d 1196, 1202 (Fed. Cir.

1987). Here, Honeywell has failed to present undisputed facts showing that an SCR's gate-triggering attribute is not simply an additional feature over those described in the patent's claims.

In its summary judgment motion, Honeywell also raises several arguments related to ICM's use of the doctrine of equivalents with respect to the negative resistance device. Honeywell Mem. at 20–23. Specifically, Honeywell claims that ICM's proposed use of the doctrine would vitiate its claims. Id.; cf., e.g., Cadence Pharm. Inc. v. Exela PharmSci Inc., 780 F.3d 1364, 1371 (Fed. Cir. 2015) ("A holding that the doctrine of equivalents cannot be applied to an accused device because it 'vitiates' a claim limitation is nothing more than a conclusion that the evidence is such that no reasonable jury could conclude that an element of an accused device is equivalent to an element called for in the claim . . . ." (quoting DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc., 469 F.3d 1005, 1018–19 (Fed. Cir. 2006))); Ring & Pinion Serv. Inc. v. ARB Corp., 743 F.3d 831, 836 (Fed. Cir. 2014) ("Vitiation is 'not an exception to the doctrine of equivalents, but instead a legal determination that the evidence is such that no reasonable jury could determine two elements to be equivalent.'" (quoting Deere & Co. v. Bush Hog, LLC, 703 F.3d 1349, 1356 (Fed. Cir. 2012))).

This ignores ICM's infringement contentions, which assert that the SCR is literally a negative resistance device within the meaning of the patent. Exs. pt. I, Ex. 2, at C-3 to -4. The only equivalents argument made by ICM with respect to the negative resistance device concerns the order of connection among the SCR, capacitor, transformer primary winding, and a grounded path. Id. Honeywell admits this is "an insubstantial difference" in its responsive statement of material facts, Honeywell Resp. SMF ¶ 96, negating its argument that such a

difference vitiates ICM's claims, Honeywell Mem. at 22–23. Application of the doctrine of equivalents is irrelevant if an accused product literally infringes the disputed claim element, and Honeywell has failed to meet its summary judgment burden on this issue.

E. Relay Actuator Coil

As discussed in the three preceding sections, Honeywell has failed to show that it is entitled to summary judgment on the grounds of noninfringment. Turning then to the unaddressed portions of ICM's motion, it is also clear that ICM has not shown its entitlement to summary judgment that Honeywell has infringed the '645 Patent. This is because ICM misconstrues the term "relay actuator coil," which the specification reveals to mean a coil used to magnetically close associated electrical contacts, thus actuating another device or devices by completing a circuit.

As discussed above, ICM has identified an inductor in each series of accused products as the "first relay actuator coil" within the meaning of the patent. E.g., ICM Mem. at 8; see also, e.g., Exs. pt. I, Ex. 2, at C-1 to -2 (alleging literal infringement of the "first relay actuator coil" element). According to ICM, a coil qualifies as a relay actuator coil if it is "[a]n inductive actuating device with a single winding of conductor wire." Joint Claim Construction Statement at 25. Honeywell argues that the term instead means "a device that opens and closes electrical contacts to effect the operation of an actuator coil." Id. While neither of these proposed constructions is quite right, it is clear from the specification and extrinsic evidence that the inductor must be used to magnetically open or close associated contacts in order to qualify as a relay actuator coil.

In the specification, the patent states that the "invention takes advantage of the fact that the second relay actuator coil requires a relatively high closing voltage to close its associated contact, but thereafter only a relatively low holding voltage to maintain the contact closed." '645 Patent col. 4 ll. 38–41; accord id. col. 6 ll. 63–67; see also id. col. 4 ll. 20–27 (noting that "the relay contacts will not close" upon a malfunction of other components). The preferred embodiment also states that with the correct output from the microprocessor, "current flows through the relay actuator coil," which "closes its associated contacts and powers up" the associated device. Id. col. 7 ll. 35–37. The patent further describes the functionality of "these relay and actuator based arrangements" as "inductive switching," id. col. 3 ll. 16–18, and notes that the contacts in the relay "associated with the actuator coil . . . are monitored to ensure that the contacts are not fused closed," id. col. 7 ll. 39–41, lending additional support to a construction that requires electromagnetic actuation of a mechanical switch. And throughout the specification, the inventors appear to use the word "relay" in this traditional sense. E.g., id. col. 1 ll. 33–38, 50–55, col. 4 ll. 28–29; see also id. col. 2 ll. 18–21 (discussing "the coil for the gas valve relay").[17]

This intrinsic evidence from the specification fits the definition proposed by Honeywell's expert and found in the materials he cites. In his declaration, Dr. Gafford defines a relay as a device that uses the magnetic field generated by an inductor when current flows through it to

[17] This use of "relay" and "relay actuator coil" seems to have spurred the distinction between the independent claims only featuring relay actuator coils, e.g., '645 Patent col. 9 ll. 6–34, and those in which the second or subsequent coil is replaced by "another powered device," e.g., id. col. 11 ll. 13–28, col. 12 ll. 1–26; see also id. col. 5 ll. 28–30 ("The invention is not limited to arrangements in which the second driven device is a relay or actuator coil. Rather, the second device can be any powered device . . . .").

physically close a set of associated contacts, thereby completing another circuit. Second Gafford Decl. ¶¶ 22, 24. A "relay coil" or "relay actuator coil" is thus the inductor within a given relay. Id. ¶ 22; see also id. ¶¶ 87–100 (arguing that the accused products do not contain a "relay actuator coil"). While ICM's expert argues that "relay actuator coil" simply means a coil or inductor so long as it has a role in "actuating" some other device, Second Eisenstadt Decl. ¶¶ 10–12, 14, this interpretation is at odds with the intrinsic evidence and cannot be adopted.

Given the Court's construction of relay actuator coil, it is clear that the accused products cannot literally infringe this element of the '645 Patent. This is because the accused first relay actuator coil is not part of a relay and does not electromechanically close associated contacts, but instead powers the first device through flyback voltage. ICM SMF ¶¶ 35–48; see also Honeywell Resp. SMF ¶ 29 (noting that the inductor in question "does not include contacts that open and close," and instead "merely provides pulsed voltage" throughout the rest of the circuit).

Since ICM's motion was based on the accused products literally containing relay actuator coils corresponding to those described in the claims, ICM Mem. at 8, summary judgment must be denied. But while ICM has failed to meet its burden for summary judgment, the Court will not dismiss the claims against Honeywell on this ground. This is because Honeywell did not raise the relay actuator coil argument in its motion for summary judgment, Honeywell Mem. at 11–23, and the Court will not grant summary judgment on this issue sua sponte without letting ICM raise a doctrine-of-equivalents argument as to this element, see Bridgeway Corp. v. Citibank, 201 F.3d 134, 139 (2d Cir. 2000) (noting that granting summary judgment on an issue without prior notice and opportunity to defend is "firmly discouraged" in

the Second Circuit); First Fin. Ins. Co. v. Allstate Interior Demolition Corp., 193 F.3d 109, 114–15 (2d Cir. 1999) (holding that, before granting summary judgment sua sponte, "[t]he record must . . . reflect the losing party's inability to enhance the evidence supporting its position" (quoting Ramsay v. Coughlin, 94 F.3d 71, 74 (2d Cir. 1996))); see also Fed. R. Civ. P. 56(f) (requiring "notice and a reasonable time to respond" before a court may "grant [a summary judgment] motion on grounds not raised by a party"). Accordingly, ICM shall have thirty days from the date of this Memorandum-Decision and Order to move to amend its infringement contentions in response to the Court's construction in this case. See L. Pat. R. 3.6(a)(1) (noting that "a claim construction by the Court different from that proposed by the party seeking amendment" will typically support a finding of good cause to amend infringement contentions).[18]

F. Connected or Coupled

The parties also dispute the meaning of the words "connected" and "coupled" when describing the connections between different components in the circuit. Honeywell argues that both "coupled" and "connected" require a direct connection between the two components, with no intervening components, Honeywell Opp'n at 27–29, while ICM argues that both terms encompass indirect connections regardless of any intervening circuitry, ICM Reply at 13–15.

Most of the circuit pathways in the claims are described with the word "connected." E.g., '645 Patent col. 9 ll. 6–34. When the term is used both there and in the description of the preferred embodiment, id. col. 6 ll. 38–63, the drawing shows that the components described are

[18] This section should not be read as implying that such a doctrine-of-equivalents contention will be meritorious, but only that a decision on the issue would be premature at this time.

directly connected with no intervening circuitry, id. fig.2. The description and drawing of the prior art similarly reveal direct connections whenever the term "connected" is used. Id. col. 6 ll. 1–37, fig.1.

The term "coupled" is used far more sparingly. Within the claims, the word is used only in describing the pathway between the microprocessor output and the switch device's control input. E.g., id. col. 9 ll. 13–16. Both the description and drawing of the preferred embodiment depict "[a] coupling resistor" between these two components. Id. col. 6 ll. 45–49, fig.2; accord id. at [57], col. 4 ll. 10–14.[19] The patent's description of the prior art also uses the term to describe an electrical pathway between two components with some intervening component between them (in that case a capacitor). Id. ll. 7–9, 13–15; see also id. col. 2 ll. 1–6, 49–54 (using "coupled" to describe various connections).

The Court agrees with Honeywell's reasoning as to the word "connected," since expansion of that word's construction for purposes of literal infringement would dramatically expand the scope of the claims beyond the structure discussed in the specification. As noted in the case cited by Honeywell, including limitlessly indirect connections within the construction of connected "would mean that every electrical component [in] a [circuit] is connected to all the other components no matter how many millions of intervening components there are." Mosaid Tech., Inc. v. Samsung Elec. Co., No. 01-CV-4340, 2004 U.S. Dist. LEXIS 27636, at *52

[19] While the specification states that the coupling resistor "connects the microprocessor output" to the switch device, '645 Patent col. 6 ll. 45–49, this only serves to confirm the difference between coupled and connected. In all other cases, the drawing shows direct connections and only the word "connected" is used, without reference to any intervening circuitry or coupling. Id. ll. 38–63, fig.2. And the claims only use the term "coupled" where this intervening resistor is depicted in the drawing. E.g., id. col. 9 ll. 6–34.

(D.N.J. Mar. 23, 2004). While, for example, the addition of a resistor between two components might not exclude a circuit from the scope of the patent, the argument that the differences between the claims and the accused products are inconsequential must be made through the doctrine of equivalents. As discussed above, ICM may move to amend its infringement contentions to include equivalents allegations with respect to the term "connected."

Honeywell's argument concerning the term "coupled," on the other hand, is not well taken. Looking to the specification as well as the claims themselves, the inventors explicitly use the term "coupled" when a connection may be indirect. Indeed, since the preferred embodiment includes a resistor between the microprocessor output and the switch device, '645 Patent col. 6 ll. 45–49, interpreting "coupled" to require a direct connection would exclude the preferred embodiment from the claims—a strongly disfavored practice, e.g., Amgen, 314 F.3d at 1349. The contrast between the inventors' use of "coupled" and "connected" within the claims and specification lends further support to the separate definition of these words.

Case law confirms this construction as a common and ordinary use of the term. MEMS Tech. Berhad v. Int'l Trade Comm'n, 447 F. App'x 142, 151–52 (Fed. Cir. 2011) (defining "electrically coupled" to include indirect connection between components); Pass & Seymour, Inc. v. Hubbell Inc., No. 07-CV-945, 2009 WL 7296903, at *19–21 (N.D.N.Y. Dec. 30, 2009) (noting that the customary definition of "coupled" includes "direct and indirect connection"), adopted in part by 2011 WL 32433 (N.D.N.Y. Jan. 5, 2011); Arrow Comm'cn Labs., Inc. v. John Mezzalingua Assocs., Inc., No. 05-CV-703, 2008 WL 5597695, at *7–8 (N.D.N.Y. May 16, 2008) (same), adopted in part by 2009 WL 290398 (N.D.N.Y. Feb. 5, 2009). Furthermore, the Eastern District of Texas has strongly criticized Mosaid—the sole case cited by Honeywell

on this point—for limiting the term "coupled" to direct connections. Charles E. Hill & Assocs., Inc. v. Abt. Elecs., Inc., No. 09-CV-313, 2012 WL 72714, at *17–18 (E.D. Tex. Jan. 10, 2012). Thus, while the Court construes "connected" to require a direct connection between the listed components, the word "coupled" permits an indirect connection within the meaning of the patent.

G. Other Claim Construction Issues

1. Powered Device

Though unnecessary to resolve the parties' summary judgment motions, it is worth addressing two additional claim construction issues presented in the briefing in order to avoid additional motion practice in this case. First, in its opposition, Honeywell argues that the term "powered device"—found in independent claim 12, '645 Patent col. 11 ll. 13–28, col. 12 ll. 1–14—is invalid due to indefiniteness, Honeywell Opp'n at 26–27.

At the outset, Honeywell appears to have omitted this invalidity contention from its noninfringement disclosures, Dkt. No. 132-32, Attachment D, at 24–25, meaning the Court does not need to address this argument, see L. Pat. R. 3.3(b)(4) (requiring that all claims of indefiniteness be included in a party's noninfringement disclosures). But even on the merits, Honeywell is incorrect. A patent can be void for indefiniteness only if, when reading the claims in light of the specification and prosecution history, a person reasonably skilled in the art would not comprehend the scope of the invention. E.g., Nautilus, Inc. v. Biosig Instruments, Inc., 134 S. Ct. 2120, 2124 (2014); Eli Lilly & Co. v. Teva Parenteral Meds., Inc., 845 F.3d 1357, 1370 (Fed. Cir. 2017); Sonix Tech. Co. v. Publ'ns Int'l, Ltd., 844 F.3d 1370, 1377–81 (Fed. Cir. 2017).

In this case, the specification provides sufficient context for the term "powered device," which is used in contrast with the construction of "relay actuator coil" discussed above:

> The invention is not limited to arrangements in which the second driven device is a relay or actuator coil. Rather, the second device can be any powered device, where the first relay actuator coil, the diode, the capacitor and the negative resistance device serve as a power supply for the powered device.

'645 Patent col. 5, ll. 28–33; see also id. col. 8 ll. 53–56 ("[O]ther powered devices besides actuator coils could serve as the driven elements."). The specification goes on to note that a logic circuit is just one example of such a powered device, describing how the rest of the circuit serves as a power supply for this device in the same manner that it would for a second relay actuator coil. Id. col. 5 ll. 28–37. Thus, "powered device" is properly construed as including any electrically powered device or circuit, reflecting the inventors' intention to claim any arrangement in which the flyback voltage from the first relay actuator coil, after discharging through the negative resistance device in the manner described above, is used to power a second electrical device.

2. The "One of Said Devices" Term

Finally, Honeywell argues that the language "relay actuator coil for actuating one of said devices" lacks an antecedent basis due to the "said devices" term. Honeywell Opp'n at 16–17. Under this view, ICM is caught in a catch-22: for the accused products to infringe, the preamble must not be limiting (as discussed above), but the preamble is necessary to give meaning to the term "said devices," which refers to the "actuator devices" discussed in the preamble. Id. Thus, because "said devices" is left without an antecedent basis, the claim is void for indefiniteness. Id.

Honeywell's argument fails because even without an explicit antecedent basis, a claim term is still not indefinite if its meaning is sufficiently clear. As the very section of the Manual of Patent Examining Procedure cited by Honeywell says, "[o]bviously . . . the failure to provide explicit antecedent basis for terms does not always render a claim indefinite. If the scope of a claim would be reasonably ascertainable by those skilled in the art, then the claim is not indefinite." MPEP § 2173.05(e) (9th ed. Nov. 2015); accord, e.g., Microprocessor Enhancement Corp. v. Tex. Instruments Inc., 520 F.3d 1367, 1376 (Fed. Cir. 2008); Energizer Holdings, Inc. v. Int'l Trade Comm'n, 435 F.3d 1366, 1370–71 (Fed. Cir. 2006). Indeed, so long as the claim "is amenable to construction," it "is not invalid on the ground of indefiniteness." Energizer, 435 F.3d at 1371; see also Halliburton Energy Servs., Inc. v. M-I LLC, 514 F.3d 1244, 1249 (Fed. Cir. 2008) (noting that a claim can be indefinite for lack of antecedent basis only "where such basis is not otherwise present by implication or the meaning is not reasonably ascertainable"). Here, the claim is fully capable of construction, because the "said device" term is not itself part of the inventive structure, namely, the circuit described by the claims. The relay actuator coil is the relevant part of the patent's structure, and is used to close (i.e., actuate) its associated contacts, thus completing a separate circuit and powering another device. Since the language "for actuating one of said devices" is merely functional and refers to the purpose of the relay actuator coil, Honeywell's claimed lack of antecedent basis does not render the claim indefinite.

Furthermore, even if reference to the preamble were needed to properly construe "said devices," the term "actuator devices" could provide such an antecedent basis without transforming the rest of the preamble—namely, "from a single microprocessor output"—into a limitation. See Deere & Co., 703 F.3d at 1358 ("[A] preamble *phrase* that provides antecedent

basis for a claim limitation generally limits the scope of the claim." (emphasis added)); Catalina, 289 F.3d at 808 ("[D]ependence on a particular disputed preamble phrase for antecedent basis may limit claim scope because it indicates a reliance on both the preamble and claim body to define the claimed invention."). Reliance on one discrete phrase in the preamble does not serve to transform its entire text—including those portions merely stating the proposed object of the invention—into limitations of the claim. TomTom, Inc. v. Adolph, 790 F.3d 1315, 1323–24 (Fed. Cir. 2015).

H. ICM's Additional Motions

Having resolved the claim construction and other issues in the parties' dueling summary judgment motions, the Court is left with two additional motions, both filed by ICM. First, ICM moves to strike several portions of Honeywell's original statement of material facts, arguing that the purported factual statements were not properly supported. Dkt. No. 110-1 ("Strike Motion Memorandum"). Second, ICM asks the court to bar Honeywell from filing any further motions for summary judgment in this case. Dkt. No. 111-2 ("Bar Motion Memorandum").

ICM's motion to strike can be quickly disposed of. Because Honeywell's motion for summary judgment is denied even accepting its statement of material facts, there is no need to review whether portions of the statement were improperly supported. Accordingly, the motion to strike is denied as moot.

Turning to ICM's request concerning future summary judgment practice, the Court agrees that some restriction is warranted. "In this district, and in federal courts generally, 'piecemeal summary judgment motions are disfavored.'" Nuss v. Sabad, No. 10-CV-279, 2016 WL 4098606, at *12 (N.D.N.Y. July 28, 2016) (Kahn, J.) (quoting Miller v. City of Ithaca, No.

10-CV-597, 2010 WL 3809842, at *9 n.6 (N.D.N.Y. Sept. 22, 2010)). Though early summary judgment motions may have some use—particularly in complex matters like patent cases—the protracted length of this case and the parties' unbridled litigiousness demand some restraint. The Court accordingly grants ICM's motion in part, and leave of the Court is required before filing any future summary judgment motion. In determining whether to grant such leave, the Court will especially look to whether the grounds for summary judgment could have been raised in or were foreseeable at the time of these earlier motions.[20]

As ICM noted, choices about when to file motions have consequences. Bar Mot. Mem. at 6–8. While criticizing Honeywell for asking Judge Baxter's permission to file an early summary judgment motion, ICM itself moved for summary judgment without any intervening progress in this case. If a second summary judgment motion is inappropriate for Honeywell, then surely it would be improper for ICM to move again as well. See id. at 8 ("[ICM] has made its bed, and should now be made to lie in it."). Thus, the Court's requirement that the parties obtain leave before filing additional summary judgment motions also applies to ICM.[21]

V. CONCLUSION

Accordingly, it is hereby:

ORDERED, that the Honeywell Summary Judgment Motion (Dkt. No. 96) and the ICM Summary Judgment Motion (Dkt. No. 128) are **DENIED**; and it is further

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[20] Of note here is the Court's construction of "relay actuator coil," since ICM will need to amend its infringement contentions to include the doctrine of equivalents.

[21] Given ICM's position that multiple summary judgment motions would be inappropriate in this matter, Bar Mot. Mem., the Court is highly disinclined to grant it leave to file a second dispositive motion.

ORDERED, that, within **thirty days** of this Memorandum-Decision and Order, ICM shall move to amend its infringement contentions to address the Court's construction of claim terms, and this motion shall be referred to Judge Baxter in accordance with the Local Rules; and it is further

ORDERED, that the Strike Motion (Dkt. No. 110) is **DENIED as moot**; and it is further

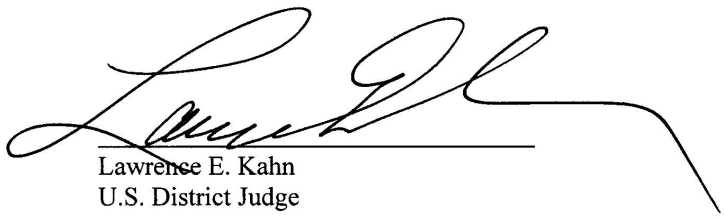
ORDERED, that the Bar Motion (Dkt. No. 111) is **GRANTED IN PART**; and it is further

ORDERED, that the parties must obtain leave of the Court before filing any further motions for summary judgment in this case; and it is further

ORDERED, that the Clerk of the Court shall serve copies of this Memorandum-Decision and Order on all parties in accordance with the Local Rules.

IT IS SO ORDERED.

DATED: June 14, 2017
Albany, New York



Lawrence E. Kahn
U.S. District Judge